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The Motivation of Signing A Perofrmance Compensation Commitment

Prof. Marco Vulpiani
SUPERVISOR

Prof. Francesco Cerri
CO-SUPERVISOR

No. 735081
CANDIDATE

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摘要

本研究以风险规避理论为基础，从收购方的角度研究签订业绩补偿承诺的动机。在 2014 年《上市公司重大资产重组管理办法》提出的背景下，业绩补偿承诺的签订越来越市场化。因此，对签订动机的研究将会更有意义，同时能够为中小股东提供更多与交易相关的信息。

本文主要研究了 3 个问题：1）目标公司的行业风险是否对业绩补偿承诺的签订有积极影响；2）目标公司的财务风险、经营风险等公司风险是否对业绩补偿承诺的签订有正向影响；3）交易风险是否对业绩补偿承诺的签订有正向影响?

为了检验我们的假设，我们以 2018-2020 年的 180 起中国并购交易为样本，分析行业、公司和交易层面的风险对业绩补偿承诺签订的作用。

研究结果证明：1）行业风险越高，签订业绩补偿承诺的可能性越大；2）没有明显证据表明目标公司的风险对业绩补偿承诺的签订有正向或负向影响；3）交易风险越高，签订业绩补偿承诺的可能性越大。

最后，我们进行了稳健性检验来确认我们得到的结果，并从收购公司、中小股东和目标公司的角度讨论了本研究可能具有的管理意义。

关键词：业绩补偿承诺；估值调整机制；并购重组

Abstract

This study aims at researching the motivation of signing a performance compensation commitment from acquirers' perspective under the risk aversion theory. Under the background of Measures on merger and acquisition of listed companies put forward in 2014, the signing of performance compensation commitment became more and more market-oriented. Thus the research on the signing motivation would be more meaningful and can provide much more practical information.

We investigated three research questions: 1) does industry risk of the target company has a positive impact on the signing of performance compensation commitment; 2) does company risk of target company has a positive impact on the signing of performance compensation commitment; 3) does transaction risk has a positive impact on the signing of performance compensation commitment?

To test our hypotheses, we use a sample of 180 Chinese merger and acquisition transactions from 2018 to 2020, and we analyzed the impact of risk from industry, company, and transaction levels on the signing of performance compensation commitment.

The results of the study prove empirical evidence that: 1) the higher the industry risk, the more likely it is to sign the performance compensation commitment; 2) there is no significant evidence that the target company's risk has a positive or negative impact on the signing of performance compensation commitment; 3) the higher the transaction risk, the more likely it is to sign the performance compensation commitment.

Finally, we conducted three robust checks to confirm the results we have gotten and discussed the managerial implication the study may have from the acquiring company, young shareholder, and target company's points of view.

Keywords: performance compensation commitment; valuation adjustment mechanism; merger and acquisition

1. Introduction

1.1 Motivation and contribution

This study aims at deepening our understanding of performance compensation commitment, which was put forward by the China Securities Regulatory Commission (hereafter as CSRC) in 2008 under the background of equity division reform[i]. We analyzed the signing motivation of performance compensation commitment based on risk aversion perspective. Moreover, this paper tries to split the risk into three different levels: industry, company, and transaction, enriching the analysis of performance compensation commitment and providing some hints to practical applications.

There has been abundant literature about mergers and acquisitions, covering topics like post-acquisition performance (Healy, Palepu and Ruback (1992); Franks, Harris, and Titman (1991); Feng et al. (2001); Li et al. (2004), etc.), valuation adjustment mechanism (Datar, Frankel, and Wolfson (2001); Barbopoulos, Paudyal, and Sudarsanam (2012, 2017); Cadman et al. (2014); Lv and Han (2014); etc.) and performance compensation commitment (Pan, Qiu, and Yang (2017); Yin and Wu et al. (2019); etc.). In terms of performance compensation commitment, the current kinds of literature mainly cover the signal and incentivization effect of performance compensation commitment (Lv and Han (2014); Pan, Qiu and Yang (2017); etc.), performance compensation direction and methods (Pan, Qiu and Yang (2017); Wang (2018); etc.), accounting treatment of different methods (Xie (2016); Yu and Xue (2015); etc.), and related goodwill impairment (Zhang (2021); Wang (2021); etc.). However, few pieces of research have focused on the analysis of motivation for signing performance compensation commitment (Zhou and Chen (2020); Rao and Zhou (2020); etc.). More importantly, few studies cover the influence of financial risk and operational risk at the company level on performance compensation commitment signing. Therefore, this study, to some degree, can fill this gap in the existing literature.

The performance compensation commitment mechanism has been widely used in China's capital market since it was proposed in 2008. It requires that for transactions of underlying assets valued based on future earnings expectations, the listed companies should sign the performance compensation agreements with their counterparties. However, in the concrete implementation process, it failed to give play to protect the interests of young investors. The signing of the agreement more or less became formalistic, leading to the occurrence of major shareholders arbitrage away from the market while young shareholders beard the loss ultimately. After introducing the new regulations in 2014, listed companies can negotiate whether to sign the performance compensation commitment according to market-oriented principles. The signing of performance compensation commitment has become more of a market-oriented behavior. Under this background, the research on why acquirers would actively propel to sign performance compensation commitment is more practical. Moreover, the signing behavior can also send some valuable signals to the market.

1.2 Research question and findings

Based on the perspective of risk aversion, this paper studies factors that affect the signing of performance compensation commitment from three levels, including industry, company, and transaction. The paper puts forward three hypotheses, respectively: 1) the higher the industry risk, the greater the possibility of signing performance compensation commitment; 2) the higher the company risk, the more likely it is to sign the performance compensation commitment; 3) the higher the acquisition premium, the greater the possibility of signing performance compensation. The risk at the company level is measured from two aspects: financial risk and operational risk. Due to the nature of the independent variable being a binary variable, the paper uses Probit regression to carry on empirical analysis. It is found that: 1) there is a significant positive correlation between industry risk and performance compensation commitment; 2) there is no significant correlation between company risk and commitment at the level of corporate risk, no matter financial or operational; 3) the higher the acquisition premium, the more likely the performance compensation commitment to be signed. In conclusion, hypothesis 1 and hypothesis 3 are both confirmed, and there is no sufficient evidence supporting hypothesis 2.

1.3 Limitations and future development

This paper still has some limitations on the research on motivation of performance compensation commitment. Firstly, there is a robust reverse causality between acquisition premium and performance compensation commitment signing. The paper failed to find an appropriate instrumental variable to test the corresponding two-way causality in robustness test. Secondly, the problem of sample selection has the possibility of leading to wrong conclusions. After a series of screening, the sample size of the paper is generally tiny, and most of the data were collected manually, so the selection of samples and corresponding indicators would be limited due to the availability of data. Finally, this paper failed to consider all the factors that affect the commitment signing. In the context of the gradual marketization of performance compensation commitment mechanism, there is still room for further exploration of other relevant motivations in the future.

2. Literature Review

In this section, the study will focus on reviewing kinds of literature in terms of merger and acquisition performance, valuation adjustment mechanism, and performance compensation commitment, which is unique to China. Then the study puts forward three hypotheses based on the accurate review of the available related kinds of literature.

2.1 Merger and acquisition performance

2.1.1 Foreign literature

Merger and acquisition (M&A) is a hot topic in the capital market, an efficient tool for optimizing resource allocation as acquirers are more willing to take over targets that have a high possibility of generating synergies after combination. Meantime, mergers and acquisitions also arouse heated discussion in the academic arena. Many scholars devoted to the analysis of post-acquisition performance and found out different empirical shreds of evidence. Post-acquisition performance is the most well-researched topic scholars devoted to. The way to measure post-acquisition performance can be divided to two categories: operation performance and share price performance.

For operation performance, some held the view that mergers and acquisitions could significantly increase acquirers' operation performance by creating synergies through resource sharing and complementarity. Healy, Palepu, and Ruback (1992) examined the post-acquisition performance of 50 American mergers and discovered that, relative to industry asset productivity, the productivity of companies involved in mergers and acquisitions has been significantly improved post acquisition, leading to higher operating cash flow returns. Based on Healy et al.'s (1992) research, Switzer (1996) used 324 samples between 1967 to 1987 and found that the operation performance of acquiring companies improved. Bradley, Desai, and Kim (1988) quantified the synergistic gains and found that the combined value could be increased by an average of 7.4% for a successful tender offer. Jensen and Ruback (1983) also believed that mergers and acquisitions generated positive gains and target shareholders benefited while acquiring firm shareholders did not lose. However, Ghosh (2001) found no evidence that operation performance improved post acquisition by using firms matching performance and size as a benchmark. Shantanu and Vijay (2009) examined 1,300 acquisitions in Canada and found no significant changes in long-term operation performance. Sharma and Ho (2010) also found no significant improvements in post-acquisition operation performance in Australia. Jakobsen, Jan, Voetmann, and Torben (2000) investigated the short-run and long-run post-acquisition performance by applying Geometric Brownian Motion model and they found that the long-horizon abnormal return after three years is insignificant different from zero. King, Dan, and Covin (2010) employed the meta-analytic techniques to study the impact of some variables on post-acquisition performance and found that acquiring companies' performance did not improve along with the acquisition. Even worse the performance was affected by the acquisition negatively.

For share price performance, Franks, Harris and Titman (1991) concluded that share price performance improved materially. Furthermore, Dennis and Mcconnel (1986) found statistically reliable evidence that acquiring companies' ordinary stockholder gained. However, Agrawal, Jaffe, and Mandelker (1992) found that the shareholders of acquiring firms beard a loss of nearly 10% over the 5-year post-acquisition period for companies listed in NYSE. N D'Souza (2006) found the share price was underperformed in the 3-year post-acquisition period by using Buy and Hold Abnormal Return methodology based on the study of 29 mergers and acquisitions of UK targets.

In conclusion, post-acquisition performance is a hot topic researched by scholars in western countries, but opinions vary in different papers. Furthermore, many scholars tried to find out intermediate factors influencing the performance, including acquisition experience (Hu, Li, Li and Wang (2020)), culture difference (Bereskin, Byun, Office and Oh (2018)), target companies' operation efficiency (Kim, Na, and Kim (2018)), the organizational difference (Datta (1991)), etc. Hu, Li, Li, and Wang (2020) found that mega-deals with acquirers having former acquisition experience (at least 12 transactions before) would perform better post-acquisition. Bereskin, Byun, Office, and Oh (2018) found that cultural similarity positively impacted the success rate of mergers and acquisitions, and counterparties with higher cultural similarity would perform better after acquisition. Kim, Na, and Kim (2018) claimed that the target firm's operational efficiency determined the post-acquisition performance in addition to financial factors. Datta (1991) found that the difference of top management style has a negative impact on acquisition performance, which is reflected in the level of post-acquisition integration. However, no such relationship was observed between the difference of reward and evaluation system and post-acquisition performance in either high integration or low integration subgroups.

2.1.2 Domestic literature

Since the establishment of the securities market in 1990, asset restructuring has developed at an alarming speed, among which corporate mergers and acquisitions account for the most significant proportion. And after 1998, the number of mergers and acquisitions of listed companies has soared, and domestic academic research on post-acquisition performance began to carry out.

Unlike western countries' capital markets, the development stage and efficiency of the Chinese stock market left much to be desired, and share price was unable to reflect the true value of listed companies. In consideration of this, scholars preferred to use financial indicators to reflect the post-acquisition performance. Feng et al. (2001) found out post-acquisition performance overall experienced an up-and-down process. Basically, after three years, the performance of acquirers began to decline. Li et al. (2004) also confirmed Feng et al.'s (2001) analysis. A significant increase of listed companies' post-acquisition performance could be witnessed only after the first year of acquisition, and the later-on performance declined to the degree that can even offset the increase of the first year. That is to say, mergers and acquisitions failed to increase the operation

performance of acquirers substantially. More importantly, Li et al. (2014) also analyzed the combined post-acquisition performance by pairing the acquiring company and target company. They found that post-acquisition performance of the acquiring company and the target company shows prominent "strong and weak" matching characteristics. Wu (2008) and Li (2008) found that post-acquisition operation performance lacked sustainability. Zhang, Qiao and He (2015) claimed that from a long-run perspective, the mergers and acquisitions of listed companies in China at present were inefficient, which did not achieve the effect of resource integration and value creation.

Chen and Xing (2018), however, held the exact opposite opinion. They found that most listed companies failed to have performance improvement until three years after acquisition. Lu (2012) calculated acquirers' EVA and analyzed their variation trend. He found that most companies experienced damage of shareholders' benefits after two years post-acquisition and a slight improvement could be seen after three years.

Li et al. (2003), based on the DEA analysis method, calculated the related performance indicator before and after acquisition and found out that acquisitions increased listed companies' operation management efficiency. The upward trend was kept for several years after acquisition.

Research on the factors affecting the performance of mergers and acquisitions is also emerging, including payment methods (Ge (2015)), related transactions (Zhang, Qiao, and He (2015)), corporate culture (Wang and Gan (2014)), government intervention (Pan, Xia, and Yu (2008)), merger types (Li and Zhu (2006)), industry life cycle (Fan and Yuan (2002)), etc. In terms of payment method, Ge (2015) found that cash payment and the combination of cash and asset payment showed no significant relations to improve the post-acquisition performance. However, the asset payment method showed a good start but declined later, and the combination of cash and assumed debt payment also showed a trend of rising first and then declining. As for related transactions, Zhou (2012) found that unrelated transactions showed better performance than related transactions since related transactions in China were not in seeking profit or synergies but for some political reason. In terms of corporate culture, Wang and Gan (2014) claimed that the stronger the acquirer's culture was, the long-term performance would be worse for acquirers. Pan, Xia, and Yu (2008) found that the post-acquisition performance of companies who had made a profit in the sample set had a positive correlation with government relevance. Li and Zhu (2006) believed that diversified merger and acquisition could lead to the loss of acquirers and the loss could be 6.5% to 9.6% in one to three years after acquisition. Fan and Yuan (2002) found that companies in different industries had different performances after different types of mergers and acquisitions. They claimed that companies in growing industries had the best performance in horizontal mergers and acquisitions; companies in mature industries had the best performance in vertical mergers and acquisitions; companies in declining industries did the worst in horizontal mergers and acquisitions.

In general, scholars generally believed that mergers and acquisitions failed to give full play to due synergies and failed to improve performance as expected.

2.2 Valuation adjustment mechanism

Most companies conduct mergers and acquisitions to achieve synergies and improve the overall profitability and efficiency of return on asset investment. However, when a company acquires a potential acquisition target, it will incur high acquisition risk due to the information asymmetry between the two parties and the uncertainty of future operation, especially when the acquiring company needs to pay a high acquisition premium for the possible synergies. The acquiring company essentially bears the risk. In order to reduce the risk caused by operation uncertainty, the valuation adjustment mechanism in the investment field is applied to merger and acquisition transactions.

2.2.1 Foreign literature

The valuation adjustment mechanism appears more as earnouts on merger and acquisition transactions in western countries. Earnouts (contingent considerations) provide sellers with future payments conditional on meeting certain commitment. In essence, earnouts enable less-informed bidders to shift the risk of mis-valuation of the more informed targets under the background that acquiring companies and target companies have different expectations to the target value (Kohers, Ninon, Ang, James (2000).

An earnout is more likely to be used in acquisitions if the target company is a smaller and private company in a different industry from the acquiring company. There is more severe information asymmetry (Datar, Frankel, and Wolfson (2001)). Ragozzino and Reuer (2009) also confirmed that the usage of contracts like earnouts increased with information asymmetries surrounding mergers and acquisitions, in particular when privately-held targets were young or possessed knowledge bases that were dissimilar from acquiring companies'. Cain, Denis, and Denis (2011) confirmed that earnouts could significantly minimize the costs of valuation uncertainty and moral hazard in acquisition negotiations by analyzing determinants including earnout size, performance measure, period, form of payment, etc.. Choi (2015) examined how earnouts could facilitate merger and acquisition transactions; under the background of information asymmetry between acquiring companies and target companies and different expectations towards target values, earnouts could mitigate the problems of private information and non-convergent priors.

Barbopoulos and Sudarsanam (2012) found out that acquiring companies using earnouts generated significantly higher announcement and post-acquisition value gains than acquiring companies using non-earnout currencies, as earnouts were a valuable tool to mitigate the risk. Generally, earnout deals outperformed non-earnout deals (Barbopoulos, Paudyal, and Sudarsanam (2017); Datar, Frankel, and Wolfson (2001)) in the pre-SFAS 141R period.

Cadman et al. (2014) believed earnouts could produce incentive effect. However, it also had risks, which may easily lead to the short-sighted behavior of the company management that only focused on achieving the promised performance and neglecting the long-term development of the company in post-SFAS 141R period. Craig and Smith (2003) stated that earnouts were a head-in-the-sand approach to valuation. The

lack of legislation at the beginning of the 21st century led to the wildly use, and more importantly, earnouts failed to align personal interest and company profitability. Elmar, Lukas, Jeffrey, J., Reuer, Andreas, and Welling (2012) analyzed the earnouts structure, which was the balance between the initial payment and the variable payment. They found that an earnout was not costless to acquiring companies and the cost was highly related to the uncertainty of the target companies' future cash flows.

Battauz, Gatti, Prencipe, and Viarengo (2021) developed an option pricing model to value earnouts. The model encompasses two peculiar sources of risk: bidder default before the earnout expiration and potential litigation associated with earnouts. That is to say, default risk and litigation risk had a great impact on the earnouts.

Recently, earnouts are becoming a financing source of financially constrained acquirers (Bates, Neyland, and Wang (2018).

2.2.2 Domestic literature

Unlike valuation adjusting mechanism in western countries, domestic valuation adjusting mechanism includes two parts: performance commitments, an investing agreement between acquiring companies and target companies and the latter promise to achieve a particular growth of the business, and performance compensation commitment. The two are usually used together. A typical example valuation adjusting mechanism in listed company acquisition can be "proposed net profit (deducting non-recurring gains and losses) per year from 2013 to 2016 should be 140.95 mn RMB, 181.88 mn RMB, 236.94 mn RMB, and 242.98 mn RMB respectively. If the actual net profit fails to meet the promised level, then the target company should compensate by stock" (Huace Media in the acquisition of Croton media, 2012)

In recent years, earnouts, which are popular in the western merger and acquisition market, have also started to make a mark in China, such as Luoyang Molybdenum Group's acquisition of Freeport Macmillan (Chen (2017)). But there are still few transactions using earnouts overall in China, mainly because the legal and institutional environment for earnouts have not been established yet. In transactions where earnouts were used, their features were consistent with international design practices. The payment scheme was relatively flexible, enabling transactions to be completed smoothly and reducing the risk of overpayment by the acquiring company (Chen and Li (2015)). Compared with earnouts, performance commitment and performance compensation commitment were the mechanisms designed by CSRC in consideration of particular circumstances of the Chinese market.

Zhang (2014) believed that the valuation adjusting mechanism could effectively solve the valuation difference between the two parties to facilitate the completion of transactions and improve the success rate of merger and acquisition integration. Research of valuation adjusting mechanisms in China mainly lied in legal and managerial arenas. From a legal perspective, scholars focused more on the legitimacy of the valuation adjusting mechanism in China's capital market and the legal risks faced by the investors and the financiers

when they sign the agreements. From a managerial perspective, research was more related to the operation mechanism and management incentive of valuation adjusting mechanisms (Lv and Han (2014)).

In terms of legislation, Li and Feng (2014) believed the existence of a valuation adjusting mechanism was highly related to the difficulty of enterprise valuation, the imperfection of investment law, and the poor environment of the capital market in China. Liu and Wang (2015) claimed that the preferred equity arrangement in the valuation adjusting mechanism violated the provisions of Contract Law.

In terms of management, Xiao (2011) analyzed the case of Mengniu (Dairy milk company) in commitment with Morgan Stanly. They found that the valuation adjusting mechanism could be classified as external financial performance incentives, especially when a company's internal incentive mechanism was missing. However, the seller might be overly optimistic about the target's future performance and get a high valuation. They might lack prediction of the external environment and tended to ignore the problems within the enterprise. At the same time, in order to achieve the performance commitment, targets might take some short-term actions rather than unconventional development, which would essentially disrupt the development rhythm of the enterprise and increase the operational risk (Xiao (2011); Liu and Wang (2015)).

2.3 Performance compensation commitment

2.3.1 Performance compensation commitment and post-acquisition performance

To some extent, the incentive effect of the performance commitment agreement is beneficial to improve the performance of mergers and acquisitions and reduce the merger and acquisition risk for acquiring companies. Given the characteristics of the Chinese market, CSRC put forward the performance compensation commitment to protect young investors and conform to the Equity division reform in 2008. ***The Measures for the Management of Material Assets Reorganization of Listed Companies*** *(hereafter as "The Measure(2008)")* published in 2008 requires that, for transactions of underlying assets valued based on future earnings expectations, counterparties of the transaction should sign performance compensation agreements with the listed companies. Performance compensation commitment is a kind of valuation adjusting mechanism in essence, which is a negotiation and compensation mechanism used by both parties due to the uncertainty of future risks and performance.

Lv and Han (2014) believed that the introduction of performance compensation commitment could provide signal value for the acquiring companies, reduce the transaction costs of mergers and acquisitions, improve the chances of high-quality companies being acquired, and improve the synergistic effect of mergers and acquisitions. At the same time, the pressure of performance compensation commitment could motivate management to promote integration further. Pan, Qiu, and Yang (2017) tested the empirical data of the listed companies on SME and GEM. They found that the performance compensation commitment did indeed have an incentive effect on the improvement of the target companies' performance after mergers and acquisitions. However, the incentive effect was affected by the promised performance growth rate, showing an inverted U-

shaped relationship between the two. The corresponding high-performance commitment rate would face a higher risk of impairment of consolidated goodwill in the future, which was more evident in the media industry, where earnings management was widespread (Ye (2021)). Yan and Zhang (2019) believed that the signing of the performance compensation commitment sent a positive signal to the market. In the short term, the cumulative excess return of transaction with performance compensation commitment was significantly higher than that without the commitment. Yang and Cao (2017), based on the empirical evidence of significant mergers and acquisitions of state-owned listed companies, found that performance compensation commitment helped promote the synergistic effect of mixed-ownership reform. Yin et al. (2019) found that the introduction of performance compensation commitment agreement in merger and acquisition transactions could reveal the value of companies, effectively reduce the information asymmetry between target companies and acquiring companies, and significantly improve merger and acquisition performance.

However, some scholars held different ideas. Based on the empirical data of significant mergers and acquisitions, Yang et al. (2019) found that the signing of a performance compensation commitment was significantly positively correlated with the short-term post-acquisition performance of acquiring companies but negatively correlated with the long-term performance. Although performance compensation commitment could reduce the transaction cost and improve the efficiency of mergers and acquisitions, it would also inhibit enterprise R&D and affect long-term performance. Rong et al. (2019) also found that performance compensation commitment affected short-term share price performance positively. Rao et al. (2017) analyzed from the perspective of performance commitment expiration. They found that after the expiration of performance commitment, the operating performance of listed companies would decline significantly.

The problem that the performance compensation commitment cannot improve the long-term performance is constantly appearing in concrete implementation process, and ***The Measures*** (2008) issued to protect the interests of young shareholders also fails to meet that expectations. In the implementation process, the phenomenon of high-performance commitment is commonplace, and the final performance compensation is just a formality, which damages the interests of a large number of young shareholders. In effect, small and medium-sized investors in a weak position have to pay for the loss deriving from the formality of performance compensation (Liu and Huang (2018)) .

Zhao et al. (2014) studied this phenomenon. They found that forced unilateral performance compensation commitment had increasingly prominent drawbacks in distorting transaction pricing, harming transaction fairness, and impeding integration. Hence, it was urgent to start the system revision. Zhou et al. (2019) took the merger and acquisition of Shanghai Mingjiang by Huanghe Xuanfeng as an example, showing that performance compensation commitment could minimize the possible losses caused by the merger failure. However, performance compensation commitment still exposes merger and acquisition risks such as high-performance commitment, under-performance, earnings management, performance compensation, etc. Taking

the acquisition of Upstream Information Technology by Ourpalm as an example, Huang et al. (2018) found that it could protect investors in the short term when the company announced the signing of performance commitment. When the target company's performance was announced to be below the standard, the stock price often fell, which caused a great loss to the interests of small and medium shareholders. Moreover, this negative effect cannot be effectively compensated when the target company typically fulfilled the performance compensation commitment because the major shareholders have arbitraged away. In contrast, the young shareholders were locked in. Liu (2018) also reached the same conclusion.

Liu et al. (2014) studied the restructuring of ST Shenlong and Hareun Photovoltaic. They found that when the target company's performance was not up to standard, in order to pay compensation, the major shareholders would improve the dividend policy of the listed company and pay compensation with the dividends they received to protect themselves from the loss. But using performance compensation commitment to carry out benefit transmission would bring very big loss to the young shareholders.

In 2014, CSRC announced the ***New Restructuring Measures*** *(hereafter as* ***"New Measures(2014)"****)*: in transactions that do not result in a change of control, listed companies can negotiate whether to sign performance compensation commitment according to market-oriented principles. Under the ***New Measures (2014)*** background, the degree of marketization is deepening, and the signal function of performance compensation commitment is more obvious. When signing performance compensation commitment, the factors considered will be more comprehensive, and the two counterparties will be more cautious about risks. Based on this background, this study, starting from three dimensions of industry, company, and transaction, studies the motivation to sign performance compensation commitment in mergers and acquisitions.

At present, there are still few studies on the motivation of performance compensation commitment signing. In addition to the relationship between performance compensation commitment and post-acquisition performance, the research on performance compensation commitment mainly focuses on compensation direction, compensation method, accounting treatment, and goodwill impairment.

2.3.2 Compensation direction

From compensation direction points of view, performance compensation commitment can be divided into: one-way performance compensation and two-way performance compensation. One-way compensation means that the target should compensate for the loss if they fail to meet the performance targets agreed on the prior contract. Two-way compensation includes the clause in one-way compensation and requires the acquirer to award the targets if they achieved high performance beyond expectations. Zhang (2018) found that two-way performance compensation had a much more significant positive effect than one-way performance compensation.

However, Pan, Qiu, and Yang (2017) and Wang (2018) found that two-way performance compensation commitment did not show a more significant incentive effect. Nevertheless, the two-way performance

compensation commitment did require more auditing efforts than one-way performance compensation commitment (Wang, Zhang, and Wang (2021)).

2.3.3 Performance compensation methods

Performance compensation methods are mainly divided to: cash compensation, stock compensation, and mixed compensation. Over 70% of performance compensation agreements chose cash compensation as it is more direct and has less uncertainty, but share-based payment had a more significant incentive effect on companies (Pan et al. (2017)). Gao et al. (2010) found that stock compensation played a better role than cash compensation in improving listed companies' financial situation and business performance. Jiang (2020) found that stock compensation was better than that of cash compensation in manufacturing industry. Rao et al. (2017) found that the operating performance of listed companies that received stock compensation was better than companies that received cash compensation. Yin et al. (2019) studied further and found that the signal effect of stock compensation was more evident than that of cash compensation. The performance of companies that received stock compensation was higher than companies that received cash compensation.

2.3.4 Accounting treatment

As for the accounting treatment of performance compensation commitment, scholars' research concentrates on two aspects: cash compensation and stock compensation.

Generally, scholars reached a consensus that performance compensation commitment can be classified as contingent consideration based on China Accounting Standards (CAS), and it is essentially a kind of financial asset. However, they hold different opinions in its specific categorization (Xie (2016)). For example, Xie et al. (2016) believed that the accounting of performance compensation commitment should be distinguished between cash compensation and stock compensation. The cash compensation should be booked into the current profit and loss, while the stock compensation should be booked into capital reserves (equity premium). Yu and Xue (2015) also claimed that the performance compensation could be classified as either equity transaction or profit and loss transaction for cash compensation. The categorization should base on consideration of the status of merger and acquisition transactions and the relationship between the parties involved. For stock compensation, most companies chose the way of share repurchase to conduct performance compensation.

2.3.5 Performance compensation commitment and goodwill impairment

As for goodwill impairment under the background of performance compensation commitment, goodwill impairment was highly related to the realization of performance commitment. When the performance commitment was realized well, the acquirer did not withdraw or withdraw a small amount of goodwill impairment; when the performance commitment was realized poor, the acquirer would set aside a large or total amount of goodwill impairment (Zhang (2021)). Wang (2021) analyzed Lianjian Guangdian in the acquisition of Fenshi Media. The unrealized performance commitment led to high goodwill impairment and caused

significant loss to the acquiring company. The prominent impairment mainly originated from high acquisition premium, low restriction to shares prescribed to performance compensation and lack of supervision to the target company.

Zhang (2021) also insisted that performance compensation commitment could effectively lower the possibility of goodwill impairment provision. However, Cao (2020) believed, on the one hand, performance commitment would lead to the problem of high valuation; on the other hand, performance commitment would /have adverse effects on the company's production and operation. All of these were not conducive to the prevention of goodwill impairment risk. Therefore, performance commitment played a minimal role in the avoidance of goodwill impairment risk.

Deng and Xin (2021) found that the probability and amount of goodwill impairment accrued by managers during the performance compensation commitment period were significantly higher than that after the performance compensation commitment expires.

2.3.6 Motivation

In terms of motivation to sign performance compensation commitment, Zhou and Chen (2020) analyzed the impact of industry risk, acquisition premium, and payment method on the signing of performance compensation commitment. They found that high premium and stock payment could lead to a high possibility of signing the commitment. While under the background of horizontal mergers and acquisitions prevailing, high industry risk led to lower possibility in signing the commitment. Yin et al. (2019), from the perspective of agency theory, found that the higher the excess cash holdings and the more concentrated the equity, the less likely the target company to adopt performance compensation commitment. The larger the merger and acquisition scale was, the more likely the performance compensation commitment might be signed.

Rao and Zhou (2020) divided the motivation of introducing the valuation adjusting mechanism to two aspects. From the acquirer’s point of view, performance compensation commitment could effectively boost acquisition, lower acquisition risk, and incentivize target companies’ management team. As for targets, the valuation adjusting mechanism could facilitate the equity financing process while retain the control for managing the company.

Based on the literature review, this paper proposes the following three hypotheses related to performance compensation commitment motivation from the perspectives of industry, company, and transaction:

Under the theory of information asymmetry, acquiring companies, to some degree, can judge targets’ future operating risks by using industry risk information. The higher the industry risk is, the higher the uncertainty and volatility of target companies’ profitability. A company’s development, especially its performance growth, is highly influenced by industry and market change (Zhang (2017)). In order to ease the risk brought by industry, acquiring companies would have higher motivation to urge targets to sign

performance compensation commitment. Therefore, the first hypothesis is proposed:

H1: The higher the industry risk, the more likely it is to sign the performance compensation commitment

Whether the performance commitment can be fulfilled is highly related to the enterprise's financial situation and operational situation. When an enterprise's capital structure is unreasonable, it would lead to high financial risk and face high financial pressure in the future. If there were better investment opportunities, it could only choose to give up, which will eventually lead to the decline of the overall return on investment. When the operating risk of the enterprise is significant, the acquirer will face the greater risk of substandard performance after acquisition (Zhang (2017)), and the stronger the incentive to sign performance compensation commitment will be. Based on this, the second hypothesis is proposed:

H2a: The higher the company's financial risk, the more likely it is to sign the performance compensation commitment

H2b: The higher the company's operational risk, the more likely it is to sign a performance compensation commitment

In essence, merger and acquisition is a process of optimal allocation of resources, and the acquisition premium contains expectations of the benefits by acquiring companies. However, the study found a significant negative correlation between the merger premium and the efficiency of the acquisition (Wen (2015)). Meanwhile, a high premium was often accompanied by undesirable phenomena such as arbitrage, corruption and earnings management (Huang et al. (2018)). That is to say, high risks accompany high premium. In cases where performance commitment is failed to be met, the acquirer will suffer more significant losses. Based on this, a third hypothesis is proposed:

H3: The higher the M&A premium rate is, the more likely it is to sign the performance compensation commitment

3. Methods

3.1 Sample and data collection procedure

The sample of this study was drawn from CSMAR and Wind databases, which include the information of all merger and acquisition transactions and primary financial and operational data of un-listed companies.

Since the performance commitment period is generally three years, and to maintain data freshness, this paper selected transaction samples from the merger and acquisition database in CSMAR from January 1, 2018 to December 31, 2020.

Considering the availability of data, we set the criterion that acquirers should be listed companies. The transaction samples with acquiring companies of abnormal operating conditions such as ST and delisting of the acquirer were also removed. More importantly, the evaluation method of target companies was defined as the income method (valuation method based on future earnings expectation) in order to fit the new policy (***New Measure (2014)***).

We also set the standard that all transactions should have already been closed successfully. In consideration that information asymmetry of non-affiliated transactions is relatively significant and that ***New Measure (2014)*** mainly targets non-affiliated deals, affiliated transactions in the data samples were cut out in this paper. As transactions such as backdoor listing do not conform to merger and acquisition's economic nature, this paper also eliminated these transactions. Considering the stability of data, this paper set the transaction amount threshold as RMB 1 million.

Table 1: Criterion for sample selection

Criterion	***Standards***
Time period	January 1, 2018 to December 31, 2020
Acquirer nature	Listed companies
Acquirer status	Non ST, non-delisting companies
Valuation method	Income method
Deal status	Closed
Deal nature	Non-affiliated transactions
Deal size threshold	1 mn RMB

After the above selection, we retained 180 pierces of data.

Since target companies in the selected sample were mostly non-listed companies, indicating the difficulty of data collection. We had to process them manually for variables related to target companies' industry risk, target companies' financial and operational risk. For industry risk, firstly, we used Wind Global Enterprise Database to locate the industry target companies are in, then matched related industry code, and extracted data from CSMAR. Data related to target companies' financial and operational risk could be collected from Wind Global Enterprise Database and Skycheck.

3.2 Variables & Measures

In order to examine the three hypotheses we raised above, we had one dependent variable and four

independent variables in total.

The dependent variable of this analysis is whether to sign a performance compensation commitment *(*PCC)*. Data regarding the signing of performance compensation commitment were collected from CSMAR with the criteria that if there existed performance compensation commitment clause, the value of the index would be 1, other than it would be assigned 0.

In the first analysis of this study, aimed to test hypothesis 1, the independent variable is industry risk *(*IndRisk)*, which is designed to measure the industry risk of target companies. In consideration of data accessibility, we were unable to get the industry risk of target companies directly. Therefore, we used the industry risk (β) of listed companies corresponding to the target industry as the proxy to measure the target company's industry risk. The time interval was limited to one year before the date of first announcement of the transaction. In the calculation of target companies' industry risk, we used data from the last 365 trading days before the first deal announcement date. According to the capital asset pricing model, we adopted the daily market return average method considering the reinvestment of cash dividends and adopted the daily risk-free rate as parameter.

This paper adopted two different independent variables in order to measure financial risk *(*TarLev)* and operational risk *(*OpeRisk)* of target companies to verify the second hypothesis. As for financial risk, since the company's financial risk is highly related to the capital structure, this paper used the asset-to-liability ratio to measure the financial risk of the target enterprise. Due to the lag of the financial report, the data available to the acquiring company at the time of actual transaction is not current data. Therefore, the reporting period of assets and liabilities was set at the end of the previous year nearest to the first announcement date of the transaction. The operational risk data were obtained from the Wind database and Skycheck. The operational risk of the corresponding target company was determined by the number of operating risk items displayed in the database. Due to the inconsistencies in the data structure of Wind and Skycheck, we processed the variable into a dummy variable (if there exists any risk item, the value would be 1 or it would be 0). The items showing "no risk" in the routine check part were not included in the risk calculation.

In the third model of the study, designed to prove hypothesis 3, the independent variable is acquisition premium *(*AcqPremium)*. The index is calculated by the formula (Acquirer's Expenditure/Book value of the underlying transaction -1). Furthermore, the data could be collected from CSMAR directly.

In all the three analyses, we included control variables in terms of acquiring company's features and transaction features: acquiring companies' leverage *(*AcqLev)*, percentage of shares held by the first shareholder of acquiring companies *(*ShProp1st)*, asset size comparison between acquiring and target companies *(*SizeComp)*, payment methods *(*PayMethod)*, and share transferred to acquiring companies *(*ShareTrans)*.

The asset-liability ratio of the acquirer *(*AcqLev)* reflects the degree of financing constraints of the

acquirer. The higher the debt level of the acquirer is, the greater the financial risk it will face, and the control of the potential risk of the acquisition will be more cautious. Therefore, the asset-liability ratio of the acquirer was set as the control variable in this paper.

According to the research of Yin et al.(2019), the higher the ownership concentration, the major shareholders will have the absolute right to vote when making strategic decisions, and the stronger the motivation to infringe the interests of small and medium shareholders to obtain their interests. The signing of performance compensation commitment to some extent inhives the transfer of interests of major shareholders, so they tend not to sign performance compensation commitment. In this paper, the ownership concentration of the largest shareholder *(*ShProp1st)* was set as the control variable.

In Zhou's (2020) research, the comparison of net asset size between acquirers and targets *(*SizeComp)* has been set as control variables. We followed this routine and control the variable in our regression as we believe the size difference would have specific effects on the signing of performance compensation commitment through the market influence brought by company size.

When the acquirer uses stock for payment, on the one hand, it reduces the large outflow of cash and reduces the financing constraint; on the other hand, it also enables both parties to share risks and benefits. The acquirer chooses to adopt share-based payment rather than cash because the potential risk of the acquisition event is observed under the condition of misinformation, and thus has an impact on the willingness to sign performance compensation commitment. (Zhou and Chen (2020)) Thus, we included payment method *(*PayMethod)* as one of our control variables in our study.

The percentage of share transferred *(*ShareTrans)* is the main aspect of transaction features. Most kinds of literature have included this point as a control variable (Zhou (2020); Yin and Wu (2019); Lv and Han (2014), etc.). The percentage of shares transferred can determine the control ability that acquirers would have after acquisition, and the risk acquirers bear in the business.

Table 2: Variable list

Variables	***Variable name***	***Variable types***		***Calculation***
PCC	Performance compensation commitment	Dummy variable	Dependent variable	1 is assigned if PCC was signed; or 0
IndRisk	Industry risk	Continuous variable	Independent variable	β calculated from CAPM
TarLev	Target leverage	Continuous variable	Independent variable	Debt/Asset of target at the nearest 365 trading days before first announcement date
OpeRisk	Operating risk	Dummy variable	Independent variable	1 is assigned if there is operating risk reporting in SkyCheck before first announcement date
AcqPremium	Acquisition premium	Continuous variable	Independent variable	Acquirer payment/Book value of target -1

AcqLev	Acquirer leverage	Continuous variable	Control variable	Debt/Asset of acquirer at the nearest reporting year before first announcement date
ShProp1st	Share proportion of 1st shareholder	Continuous variable	Control variable	% of shares held by the first shareholder
SizeComp	Size comparison between acquirer and target	Continuous variable	Control variable	Net asset size of acquirer/net asset size of target at the nearest reporting year before first announcement date
PayMethod	Payment method	Dummy variable	Control variable	1 is assigned if stock payment is included
ShareTrans	% of share transferred	Continuous variable	Control variable	% of shares purchased by acquirers

3.3 Descriptive statistics

As shown in Table 3, among 180 deals, over 50% of deals include a performance compensation clause in the acquisition, indicating the wide use of this valuation adjusting mechanism.

Table 3: Year distribution of sample deals

Year	***Num. of deals***	***Num. of Deals with signing PCC***	***Num. of Deals without signing PCC***
2018	80	53	27
2019	57	31	26
2020	43	14	29
Total	**180**	**98**	**82**

By year, the number of deals in 2018 was 80 (44.4% as of total), among which 53 deals signed performance compensation commitments, accounting for 66.25% as of deals in 2018. In 2019, we have 57 deals (31.7% as of total), among which 31 deals signed performance compensation commitments, accounting for 54.38% as of deals in 2019. In 2020, there were 43 transactions, among which 14 transactions signed performance compensation commitments, accounting for about 32.56% as of deals in 2020. Performance compensation commitment agreement is wildly used each year. However, counterparties are more cautious in signing the commitment concluded from the declined trend in the deal proportion of signing the commitment.

Table 4: Descriptive statistics for variables

Variables	*PCC*	*IndRisk*	*TarLev*	*OpeRisk*	*AcqPremium*	*PayMethod*	*AcqLev*	*ShProp1st*	*SizeComp*	*ShareTrans*
N	180	180	180	180	180	180	180	180	180	180
mean	0.544	1.118	0.608	0.272	4.569	0.111	0.368	0.317	15.89	0.627
sd	0.499	0.262	0.441	0.446	13.32	0.315	0.203	0.140	62.01	0.282
min	0	0.411	0.0323	0	-88.98	0	0.0411	0.0900	0	0.0400
p25	0	1.041	0.340	0	0.901	0	0.198	0.203	2.298	0.469

p50	1	1.132	0.548	0	2.631	0	0.351	0.292	4.530	0.552
max	1	2.277	3.464	1	107.8	1	1.285	0.856	736.6	1

In terms of industry risk, the variation spans from 0.411 to 2.277. There exist industries whose industry risk is less than 1, reflecting lower risk and volatility of these industries relative to market and almost 25% targets in our sample located in industries with lower risks relative to industries. On the whole, the median and mean are both greater than 1, indicating that the asset fluctuation range of the industry in which the target enterprise is located is greater than the overall market. The risk level is slightly higher than the market. The mean and median are the same, and the overall data is distributed symmetrically.

The variation of financial risk (target leverage, measured by asset-to-liability ratio) spans from 0.0323 to 3.464. The mean asset-to-liability ratio is slightly above 0.5, and 98% of targets in our sample have an asset-to-liability ratio lower than 1. There is little difference between the median and the mean, and the overall data is distributed symmetrically.

For operational risks, which are processed as dummy variables, there are only 34 deals in which the target company is not classified as having operational risks, accounting for about 18.9%. The mean is much higher than the median, and the data is skewed to the right.

In terms of acquirer premium, the sample data were scattered on the whole. The largest acquirer premium transaction is the acquisition of Beijing Right Service Tech. Co., Ltd. and happened in the information and technology service industry. The premium rate of some deals is less than 0, indicating that the target sold on discount, mainly distributed in manufacturing industry, mining industry, commercial service industry, science and technology extension and application services, etc. The mean is higher than the median, and the data are skewed to the right.

For control variables, generally, the acquirer's leverage is lower than that of targets. The variation of acquirers' leverage spans from 0.0411 to 1.285. There is little difference between the median and the mean, and the overall data is distributed symmetrically. Furthermore, the medium leverage level of acquirers is around 0.35 (vs. 0.608 of targets), indicating low financial constraints faced by acquirers.

Share concentration has a great impact on acquirers' willingness to sign performance compensation commitment. Overall, the concentration level is relatively high as they all exceed 9% of shares held by the first shareholder, and the highest level can reach 85.6%.

In terms of size comparison, there are mainly large institutions buying small ones in the sample, and the difference in size between the two parties is about 5 times. There have also been cases of mega-firms acquiring smaller ones, with the difference in deal size between the two is more than 700x.

There are mainly three payment methods, including cash payment, stock payment, mixed payment. In order to reflect the stock payment penetration situation, we set the payment method with stock as value 1, no

matter it is a pure stock payment or a mixed payment that includes a stock payment. Among them, 20 out of 180 deals were paid with stock, accounting for about 11%. The higher the proportion of cash payment is, the greater the risk of merger and acquisition is due to the lack of risk-sharing effect under stock payment.

The share transferred variation spans from 0.04 to 1, but over 50% targets have been sold more than 50% of shares to acquirers. Around 6% of deals in our sample are 100% shares acquisition.

3.4 Correlation test

Before the regression test, we carried out Pearson correlation analysis on the variables in the study. We preliminarily found the correlation between variables and the degree of collinearity among independent variables through correlation analysis.

Table 5: Correlation test

	PCC	*IndRisk*	*TarLev*	*OpeRisk*	*AcqPremium*	*Paymethod*	*AcqLev*	*ShProp1st*	*SizeComp*	*ShareTrans*
PCC	1									
IndRisk	0.2381***	1								
TarLev	-0.109	0.0136	1							
OpeRisk	-0.117	-0.115	0.127*	1						
AcqPremium	0.2306***	0.0874	-0.0986	-0.0806	1					
PayMethod	0.110	0.00110	0.2209***	0.0618	0.00660	1				
AcqLev	-0.3267***	-0.190**	0.2624***	0.2091***	-0.143*	0.0626	1			
ShProp1st	-0.135**	0.0836	-0.0425	0.114	-0.0399	0.0598	0.00920	1		
SizeComp	-0.178**	-0.00890	-0.0422	0.0219	-0.0548	-0.0719	0.0513	0.104	1	
ShareTrans	0.0802	-0.0480	0.0384	-0.0451	0.0116	0.136*	-0.0955	-0.0395	0.0356	1

, **, * stands for significant at the 10%, 5% and 1% level*

According to Table 5, the correlation coefficient between industry risk and performance commitment compensation signing is significantly positive at the level of 1%. The result indicates that the higher the industry risk coefficient is, the higher the possibility of signing a performance compensation commitment, consistent with Hypothesis 1. No apparent correlation is found for the company's financial risk, which contradicts Hypothesis 2a. the correlation coefficient between operational risk and whether the company has signed a performance compensation commitment is also not significant, which is not consistent with Hypothesis 2b. It still needs to be further analyzed with empirical results. The acquisition premium rate is significantly positively correlated with whether the performance compensation commitment is signed at the level of 1%, which is consistent with Hypothesis 3.

Among independent variables, the correlation coefficients between every two variables are not significant except for target leverage and operation risk (significant at 10% level).

In control variables, the correlation coefficient between acquirer leverage and performance compensation signing is significantly negative at the level of 1%. The share concentration and size comparison are significantly correlated with the signing of performance compensation commitment at the level of 5%, respectively. The payment method is not significantly correlated with the signing of performance

compensation commitment. However, share transferred shows no significant correlations with signing of performance compensation commitment.

In order to better verify the hypothesis, further empirical analysis is needed.

3.5 Results

We tested four models to perform our analysis.

Model 1 used the 180 sample of merger and acquisition deals after screening from 2018 to 2020. It aims to test the impact of industry risk to the signing of performance compensation commitment. (Hypothesis 1)

Model 2 focuses on the analysis of the impact of company risk on performance compensation commitment, and it measures the company risk from two aspects, including financial risk and operating risk, and analyzes whether the two kinds of risk influence the signing of performance compensation commitment. (Hypothesis 2a and Hypothesis 2b)

Models 3 uses to test the impact of transaction risk on the signing of performance compensation commitment. (Hypothesis 3)

Model 4 is based on the former three models and results, including all the independent variables that are significant in 5% level, and test whether they all significant or not. (Hypothesis 1 and 3)

3.5.1 Model 1

This study uses a Probit regression to test hypothesis 1.

$$P(PCC = 1) = \beta_1 IndRisk + \beta_2 PayMethod + \beta_3 AcqLev + \beta_4 ShProp1st + \beta_5 SizeComp + \beta_6 ShareTrans + \varepsilon$$

Since the independent variable signing of performance compensation commitment is a dummy variable, a Probit regression would be more appropriate.

Table 6: Probit regression result of Model 1

PCC	***Coef.***	***Std.Err.***	***z***	***P>|z|***	***95% Conf.***	***Interval***
IndRisk	1.209	0.427	2.830	0.00500*	0.371	2.046
PaymentMet~d	0.455	0.350	1.300	0.194	-0.231	1.141
AcqLev	-2.035	0.574	-3.550	0	-3.160	-0.910
ShProp1st	-1.352	0.763	-1.770	0.0760	-2.846	0.143
SizeComp	-0.0222	0.00903	-2.460	0.0140*	-0.0399	-0.00455
ShareTrans	0.314	0.379	0.830	0.407	-0.429	1.057
cons	-0.0770	0.651	-0.120	0.906	-1.353	1.199
Number of obs = 180						
LR chi2 (7) = 41.10						
Prob > chi2 = 0.0000						
Pseudo R2 = 0.1656						

** stands for the result is significant*

In Table 6, column 2 signifies the direction of correlations between industry risk and signing of performance compensation commitment. The result is positive, and the p-value is lower than the threshold of 0.05. Therefore, the analysis confirms Hypothesis 1: the higher the industry risk is, the higher possibility the

company would sign the performance compensation commitment. Higher risk in the industry, the operation of companies in this industry would face much more uncertainties. In order to control the risk in merger and acquisition, acquirers would have stronger motivation to urge targets to sign the performance compensation commitment.

3.5.2 Model 2

Since the independent variable signing of performance compensation commitment is a dummy variable, to test hypothesis 2, the study also uses the Probit regression:

$$P(PCC = 1) = \beta_1 TarLev + \beta_2 OpeRisk + \beta_3 PayMethod + \beta_4 AcqLev + \beta_5 ShProp1st + \beta_6 SizeComp + \beta_7 ShareTrans + \varepsilon$$

Table 7: Probit regression result of Model 2

PCC	***Coef.***	***Std.Err.***	***z***	***P>|z|***	***95% Conf.***	***Interval***
TarLev	-0.227	0.243	-0.930	0.351	-0.703	0.250
OpeRisk	-0.122	0.233	-0.520	0.600	-0.578	0.334
PaymentMet~d	0.559	0.368	1.520	0.129	-0.162	1.280
AcqLev	-2.069	0.578	-3.580	0	-3.201	-0.936
ShProp1st	-1.076	0.756	-1.420	0.155	-2.559	0.407
SizeComp	-0.0231	0.00982	-2.350	0.0190*	-0.0424	-0.00388
ShareTrans	0.202	0.368	0.550	0.583	-0.520	0.924
cons	1.427	0.428	3.330	0.00100	0.588	2.267
Number of obs = 180						
LR chi2 (7) = 41.10						
Prob > chi2 = 0.0000						
Pseudo R2 = 0.1656						

In Table 7, column 2 shows the coefficient between target leverage and signing of performance compensation commitment, which is -0.269, but the p-value is higher than the threshold of 0.05 in column 4. Hypothesis 2a is failed to be proved. We cannot conclude that when the financial risk of the target is higher, the acquirer would have higher motivation to ask the target company to sign compensation commitment out of risk aversion.

The same results happened on operation risk. The results cannot support hypothesis 2b, and we cannot prove that the higher the operation risk is, the higher the possibility to sign a performance compensation commitment.

Possible explanations for the insignificance are that 1) the information to measure company risk is not enough. Thus we would have some bias in the results, and we would solve this problem in robust check by changing the data set; 2) from targets' point of view, they have a better understanding of their companies' risk, and out of consideration to their ability to achieve the performance commitment, they would be more conservative about the signing of performance compensation commitment if they have high financial and operating risk.

3.5.3 Model 3

A Probit regression also applies to model 3:

$$P(PCC = 1) = \beta_1 AcqPremium + \beta_2 PayMethod + \beta_3 AcqLev + \beta_4 ShProp1st + \beta_5 SizeComp + \beta_6 ShareTrans + \varepsilon$$

Table 8: Probit regression result of Model 3

PCC	***Coef.***	***Std.Err.***	***z***	***P>|z|***	***95% Conf.***	***Interval***
AcqPremium	0.0311	0.0137	2.270	0.0230*	0.00423	0.0580
PaymentMet~d	0.468	0.346	1.350	0.177	-0.211	1.147
AcqLev	-2.146	0.563	-3.810	0	-3.249	-1.044
ShProp1st	-1.047	0.762	-1.370	0.169	-2.541	0.447
SizeComp	-0.0193	0.00925	-2.090	0.0370*	-0.0375	-0.00120
ShareTrans	0.0997	0.378	0.260	0.792	-0.641	0.840
cons	1.176	0.429	2.740	0.00600	0.336	2.017
Number of obs = 180						
LR chi2 (7) = 46.86						
Prob > chi2 = 0.0000						
Pseudo R2 = 0.1889						

In Table 8, column 2 shows the coefficient between acquiring premium and signing of performance compensation commitment, which is 0.0311, and the p-value is lower than the threshold of 0.05, as we can see from column 4 in table 8. The result proved hypothesis 3, indicating that the higher the transaction risk is, the higher the possibility to sign performance compensation commitment as all the acquirers are risk-averse.

3.5.4 Model 4

Based on Model 1, 2, 3, industry risk and transaction risk significantly influence the signing of performance compensation commitment. In model 4, we overall considerate the impact of industry risk and transaction risk in Probit regression:

$$P(PCC = 1) = \beta_1 IndRisk + \beta_2 AcqPremium + \beta_3 PayMethod + \beta_4 AcqLev + \beta_5 ShProp1st + \beta_6 SizeComp + \beta_7 ShareTrans + \varepsilon$$

Table 9: Probit regression result of Model 4

PCC	***Coef.***	***Std.Err.***	***z***	***P>|z|***	***95% Conf.***	***Interval***
IndRisk	1.247	0.433	2.880	0.00400*	0.398	2.096
AcqPremium	0.0354	0.0144	2.460	0.0140*	0.00714	0.0637
PayMethod	0.461	0.355	1.300	0.194	-0.235	1.158
AcqLev	-1.951	0.581	-3.360	0.00100*	-3.089	-0.812
ShProp1st	-1.269	0.784	-1.620	0.105	-2.805	0.267
SizeComp	-0.0188	0.00878	-2.150	0.0320*	-0.0360	-0.00164
ShareTrans	0.229	0.390	0.590	0.557	-0.535	0.992
cons	-0.307	0.672	-0.460	0.648	-1.624	1.010
Number of obs = 180						
LR chi2 (7) = 55.77						
Prob > chi2 = 0.0000						
Pseudo R2 = 0.2248						

In table 9, the results still prove hypothesis 1 and hypothesis 3.

3.5.5 Robust check

1) Addition of control variables - Acquirer's profitability and growth ability

When discussing the relationship between independent variables and dependent variables, we would have the problem of omission of variables, which is a problem encountered in most of our studies. We can only add as many variables studied in previous kinds of literature that may have an impact on our results as possible to the model. In the first robustness test, we added indicators of the acquirer's profitability and growth ability.

Suppose the acquirer has better profitability and growth potential. In that case, it will have a stronger ability to deal with future uncertain risks, and the motivation to control the future risks of the acquisition is relatively weak. In consideration of this, we put acquirer's ROE and growth rate of net asset per share as newly added control variables into our Probit regression model.

Table 10: Descriptive statistics of newly added control variables

stats	*AcqROE*	*Growth rate*
N	180	180
mean	8.423	-0.2524
sd	15.39	4.041
min	-148.2	-35.12
p25	4.135	-0.1805
p50	9.060	0.1017
max	45.98	25.59

From Table 10, we can see acquirer's ROE varies from -148.2 to 45.98, but most acquirers have a positive return on equity. The variation of the growth rate of net income spans from -35.12 to 25.59. Nearly 75% of the acquirers have positive growth rate.

Putting the two new variables into Probit regression, we got the regression results as shown in Table 11.

Table 11: Probit regression result of Robust check 1)

PCC	***Coef.***	***Std.Err.***	***z***	***P>|z|***	***95% Conf.***	***Interval***
IndRisk	1.281	0.438	2.920	0.00300*	0.422	2.139
AcqPremium	0.0368	0.0146	2.520	0.0120*	0.00816	0.0654
PayMethod	0.454	0.356	1.270	0.202	-0.244	1.151
AcqLev	-2.067	0.595	-3.470	0.00100*	-3.233	-0.901
ShProp1st	-1.156	0.791	-1.460	0.144	-2.706	0.395
SizeComp	-0.0188	0.00887	-2.120	0.0340*	-0.0362	-0.00146
ShareTrans	0.247	0.395	0.630	0.531	-0.527	1.022
AcqROE	-0.00798	0.00767	-1.040	0.299	-0.0230	0.00707
GrowthRate	-2.28e-05	0.000375	-0.0600	0.952	-0.000758	0.000712
cons	-0.285	0.676	-0.420	0.674	-1.609	1.040
Number of obs = 180						
LR chi2 (7) = 57.00						
Prob > chi2 = 0.0000						

Pseudo R2 = 0.2297

In Table 11, for industry risk, the coefficient between industry risk and signing of performance compensation commitment is significantly positive, and the p-value is lower than 5%, indicating that the result of model 1 and model 4 is robust. The result of acquisition premium also signifies the robustness of model 2 and model 4. The coefficient between acquiring premium and signing of performance compensation commitment is 0.0368, and the p-value is lower than the threshold of 0.05 as we can see from column 4.

2) Heckman two-stage test

The Heckman correction is a statistical technique to correct bias from non-randomly selected samples or otherwise incidentally truncated dependent variables, a pervasive issue in quantitative social sciences when using observational data. (Winship, Christopher, Mare, Robert D (1992)) To solve the endogenous problem of sample selection bias, we used the Heckman Two-stage model to fix unobservable variables and check for bias in sample selection. Firstly, we constructed a Probit model related to factors influencing the signing of performance compensation commitment. The independent variable is the signing of performance compensation commitment, which is a dummy variable. Moreover, the dependent variables include industry risk, acquisition premium, payment method, acquirer's leverage, the share proportion held by the first shareholder, size comparison, share transferred in the deal. Then based on the regression result, we calculated the Inverse Mills index (imr). We included the imr in the second stage of regression, and results are shown in the below table.

Table 12: Heckman two-stage result of Robust check 2)

PCC	***Coef.***	***Std.Err.***	***t***	***P>|t|***	***95% Conf.***	***Interval***
IndRisk	0.491	0.188	2.620	0.0100*	0.120	0.861
AcqPremium	0.00906	0.00386	2.350	0.0200*	0.00144	0.0167
PayMethod	0.234	0.118	1.990	0.0490*	0.00148	0.467
AcqLev	-0.874	0.280	-3.120	0.00200*	-1.428	-0.321
ShProp1st	-0.635	0.288	-2.200	0.0290*	-1.203	-0.0662
SizeComp	-0.00430	0.00320	-1.340	0.182	-0.0106	0.00203
ShareTrans	0.105	0.124	0.850	0.397	-0.139	0.349
imr	0.185	0.182	1.020	0.309	-0.173	0.544
cons	0.286	0.265	1.080	0.282	-0.238	0.810
Number of obs = 180						
F (7,172) = 6.38						
Prob > F = 0.0000						
R-squared = 0.2063						
Adj R-squared = 0.1740						
Root MSE = 0.4539						

As we can see in Table 12, the coefficient of imr is 0.185, and failed to pass the p-value test (p-value is over the threshold of 0.05), indicating there is no self-selection problem. After controlling the imr, industry risk and acquisition premiums are still significant, and their coefficients are positive, supporting hypotheses 1

and 3. Our study is robust.

3) Change of data set

In former research, in dealing with the company risk (including financial risk and operational risk), we have met data scarcity because that those targets are mainly private companies. In robust check, we have changed the selection rules of setting acquirers as listed companies and set the targets as listed companies. Moreover, in consideration of data quantity, we set the period time from 2015 to 2020. Then we follow the same procedures to regress.

Table 13: Descriptive statistics of new independent variables

stats	*z-score*	*Yield Volatility*
N	83	83
mean	11.33	0.5106
sd	33.10	24.03
min	-1.289	0
p25	1.478	0.3502
p50	3.361	0.4872
max	288.3	1.341

To measure the financial risk of the target company, we used a z-score as the new independent variable. As for operational risk, we used annualized yield volatility to a proxy. The variation of z-score spans from -1.289 to 288.3, signifying the significant difference of financial risks among targets. The yield volatility ranges from 0 to 1.34. Almost all the companies' net income is in an upward trend, which is consistent with the acquisition intention of finding a target with growing potential.

Table 14: Probit regression result of Robust check 3)

PCC	***Coef.***	***Std.Err.***	***z***	***P>|z|***	***95% Conf.***	***Interval***
Zscore	0.00659	0.00922	0.710	0.475	-0.0115	0.0247
YieldVolatility	0.00550	0.00634	0.870	0.386	-0.00693	0.0179
cons	0.116	0.351	0.330	0.741	-0.572	0.804

As we can see from Table 14, the coefficient of z-score and annualized yield volatility are neither significant and the p-values are both higher than the threshold of 0.05, which are consistent with what we have found out before. Hypothesis 2 cannot be approved. Our result is robust.

4. Discussion

Merger and acquisition is a kind of widely used tool of inorganic growth for a company. Synergy is the lasting benefit that all the acquirers are seeking for, and it is an essential ingredient for value creation in the integration process (Harrison and J. S. (1991)). It can be displayed in several forms like revenue synergy, cost synergy, operation synergy, market synergy, etc. In a nutshell, mergers and acquisitions are valuable ways to optimize resource allocation and improve the investment return. In western countries, the fifth merger and acquisition tide happened during the 1990s and is more related to the international acquisition. After this tide, more and more scholars focus on merger and acquisition research, including post-merger performance, merger influencing factors, and earnouts. Moreover, at the same time, mergers and acquisitions began to happen in China. From 1997 to 2002 in China, the number of acquisition deals for listed companies reached 577. However, these deals are not market-oriented but more related to state-owned enterprise reform. In 2002, China joined WTO, which marked the beginning of the Chinese market-oriented merger and acquisition.

During the development of merger tides, the counterparties of the deal seek some new tools or mechanisms to maximize their profit and benefits. In western countries, earnouts was proposed to lower acquirers' risk originating from information asymmetry and facilitate the negotiation between two counterparties. Earnouts, to some degree, can be defined as a kind of contingent consideration clause, in which the contingent payment is based on the trigging condition is reached or not. Moreover, this kind of mechanism is wildly used on deals that targets are private companies or are the subsidiaries of listed companies (Chen (2017)). At the same time, the valuation adjustment mechanism made a figure in China while earnouts were prevalent in western countries. The two mechanisms have many similarities, as they all can be defined as pricing adjustments. The valuation adjustment mechanism can be viewed as a modification of earnouts in China. One of the first Chinese deals to embed a valuation adjusting mechanism was Mengniu (2002) and Yolo (2005) trading with Morgan Stanley, respectively.

The valuation adjustment mechanism in China can be shown in two forms: performance commitment and performance compensation commitment. The two are usually used together. In 2006, over 60% of merger deals signed the performance commitment and performance compensation commitment. Performance compensation commitment was officially proposed by CSRC in 2008 to protect small investors as merger and acquisition can be used as a tool of major shareholders to gain personal benefits. ***The Measure (2008)*** requires that where the underlying assets are valued based on the expectation of future earnings. The parties to the deal shall sign a performance compensation agreement with the listed company. However, the outcome of the application of the rule was not satisfied. Exaggerated performance commitment boosted share price, but many targets were unable to achieve, and the compensation became a mere formality. The loss from the under-expectation performance was beard by small investors. Many scholars have researched this phenomenon and proposed modifying the rule (Zhao (2014)). In 2014, CSRC proposed a new measure, and listed companies

can negotiate whether to adopt performance compensation commitment based on market rules. Under this background, the marketization degree of mergers and acquisitions and the application of valuation adjusting mechanism are deeper.

The research on valuation adjusting mechanisms would be more meaningful when application of this mechanism is more market-oriented. More information can be contained in the move whether performance compensation commitment is embedded in the deal contract or not. Thus, the motivation of signing a performance compensation commitment would be more significant.

However, very few researches have covered this part. Based on this situation, this study proposed three hypotheses covered factors on industry, company and transaction levels influencing the signing of performance compensation commitment, which enrich the papers in this filed. Through empirical analysis, two of them have been proved: industry risk and transaction risk have a significant positive impact on the signing of performance compensation commitment; while there are no significant relations between company risk and the signing.

This section would thoroughly expound the conclusion in the former empirical research, reasons behind and the way this study extends the previous related research.

4.1 Conclusion 1: Impact of industry risk on the signing of performance compensation commitment

Hypothesis 1 proposed that the higher the industry risk is, the higher the possibility to sign the performance compensation commitment.

In Zhou's (2020) study, she measures the industry risk by using the average monthly risk of industries that targets belong to. In this study, after matching the industries targets belong to, we used an average daily risk with a weight of aggregate market value. Our research has considered the risk in a more precise way.

A company's growth is dependent on the growth of the industry and the competition within the industry. When the industry risk becomes higher, the uncertainty of operating a business would be more severe, and potential growth would be hard to predict. Thus, the risk related to the merger would be higher. In terms of risk aversion and risk control, acquirers would have higher motivation to urge targets to sign the commitment.

The result is different from Zhou's (2020) research, where she did not find a significant relationship between industry risk and the signing of performance compensation commitment. However, in our study, we found a positive correlation between industry risk and signing. A possible explanation proposed by Zhou is that the sample deals are mostly horizontal acquisitions, where the information asymmetry was lowered. However, in our study, the percentage of horizontal acquisition is only 23.3%.

4.2 Conclusion 2: Impact of company risk on signing of performance compensation commitment

Hypothesis 2 proposed that the higher the company risk, the higher the possibility of signing the performance compensation commitment and measuring the company risk from financial and operational aspects.

No related papers analyzed the impact of company risk on the signing of performance compensation commitment as most of the targets are private companies and it is hard to get related information. In our study, we manually collected the financial information and operational information of targets, but the regression results are failed to prove what we proposed. We did not find a significant relationship between company risk and the signing of performance compensation commitment.

We still believe that the higher the company risk is, the higher the possibility of acquiring companies to urge to sign the performance compensation commitment. However, in real deals, usually, acquirers are unable to collect enough information to judge targets' financial and operating risk. At the same time, if a target has high risk financially or operationally, it would be more cautious about signing the commitment as they know their ability are restrained.

4.3 Conclusion 3: Impact of transaction risk on the signing of performance compensation commitment

Hypothesis 3 put forward that the higher the transaction risk, the higher the possibility to sign the performance compensation commitment.

In this study, we followed Zhou's (2020) research and used acquisition premium to measure the risk at the transaction level. Target shareholders exited out with satisfied benefits when the acquisition premium is high, leaving the potential risk to acquirers. If target companies' future performance is under expectation, the loss would be beard by the acquirer's shareholders. Therefore, when paying a high premium, acquirers would be more motivated to sign the performance compensation commitment.

Our empirical result is consistent with Zhou's (2020) research: higher premium has a positive impact on the signing of performance compensation commitment.

In order to overcome the problem of sample selection bias, we used Heckman two-step to conduct a robust check. The results of industry risk and transaction risk are still significant.

To solve the problem of omitted variable bias, in the robust check, we add two indexes related to acquirer's profitability and growth potential, the results are still significant.

In conducting the empirical analysis, we faced the problem of lacking information related to private target firms. In order to solve this, we collected deals with targets were listed companies and used Probit regression. We got results consistent with the main research.

In summary, the main conclusions of our study are listed below:

1. Industry risk has a positive impact on the signing of performance compensation commitment. The higher the industry risk is, the higher the possibility to sign the commitment
2. There is no significant relationship between company risk and the signing of performance compensation commitment.
3. Transaction risk has a positive impact on the signing of performance compensation commitment. The

higher the transaction risk is, the higher the possibility to sign the commitment

5. Managerial implications

The performance compensation commitment is a unique mechanism put forward by CSRC in consideration of China's market specialness. After the issue of the ***New Measure (2014)***, the application of performance compensation commitment became more and more market-oriented, embedding much more information in the signing move.

Another evidence that can indicate the marketization is the frequency of using performance compensation commitment. From 2018 to 2020, the percentage of transactions using the commitment is decreasing though the overall proportion of deals embedded with performance compensation commitment is still significant. The decreasing trend signifies cautiousness when using the commitment.

This study analyzed the factors influencing the signing of performance compensation commitment from industry, company, and transaction levels and found out the significant impact of industry and transaction risk. From the acquirer's perspective, our findings can provide acquirers with factors that need to be considered in urging targets to sign the commitment. For industries with high risk, the future operation uncertainty would be higher. Higher risk has been inserted into the acquisition, and urging for signing performance compensation commitment would be an excellent choice to protect acquirers' benefits.

From institutional investors and small shareholder's points of view, the motivation research can provide them with implications that the deal clause may include. For example, suppose a listed company completes a merger with a private company with performance compensation commitment clause. In that case, small shareholders can reasonably infer that the private company is in a high-risk industry or the acquisition premium is relatively high.

As for targets, after considering the industry risk and acquisition premium, they may face heavy pressure of signing performance compensation commitment, then their focus should move from whether to sign to how to construct the deal clause like the performance targets.

6. Limitations of the research and future improvements

Despite the quality of the analysis conducted above, there are still three limitations have to be considered:

Firstly, there is a robust reverse causality between acquisition premium and performance compensation commitment signing. In this study, we assume the acquisition premium has an impact on the signing of performance compensation commitment. However, there still exists an opinion that the signing of a performance compensation commitment would boost the acquisition premium. For example, Song and Liu (2020) found that high-performance commitment can lead to a high acquisition premium through analyzing the acquisition of MJ company by HH company. Unfortunately, in the robustness test, the paper failed to find an appropriate instrumental variable to test the corresponding two-way causality.

Secondly, the limited availability of data regarding private targets' financial and operational information would lead to the inaccuracy of our results. As for financial risk, we use the asset-to-liability ratio to measure the risk targets have, but we failed to find other related indexes to proxy due to data limitation. Moreover, for operational risk, due to the data not in the same format, and consideration of data consistency, we processed the data as a dummy variable. Although we changed the data set with targets as listed company out of data availability in the robustness test, it might incur some problems of sample selection.

Thirdly, this paper fails to consider all the factors that affect the commitment signing. The problem of omitted variable bias cannot be thoroughly solved by adding new variables.

Future studies could attempt to overcome the limitations by finding a proper instrumental variable to solve the listed problems. Furthermore, along with the trend that the signing of performance compensation commitment would be more market-oriented, we can find some new angles about motivations of performance compensation commitment signing and follow the same procedure of this study to examine their impacts.

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My family, father, mother, and sister, for guiding me to enjoy every moment of my life, viewing every difficulty as a precious experience.

Summary

Merger and acquisition is a kind of widely used tool of inorganic growth for a company. Synergy is the lasting benefit that all the acquirers are seeking for, and it is an essential ingredient for value creation to occur as a result of an acquisition. (Harrison and J. S. (1991)) It can be displayed in several forms like revenue synergy, cost synergy, operation synergy, market synergy, etc. In a nutshell, mergers and acquisitions are valuable ways to optimize resource allocation and improve the investment return. In western countries, the fifth merger and acquisition tide happened during the 1990s and is more related to the international acquisition. After this tide, more and more scholars focus on merger and acquisition research, including post-merger performance, merger influencing factors, and earnouts. Moreover, at the same time, mergers and acquisitions began to happen in China. From 1997 to 2002 in China, the number of acquisition deals for listed companies reached 577. However, these deals are not market-oriented but more related to state-owned enterprise reform. In 2002, China joined WTO, which marked the beginning of the Chinese market-oriented merger and acquisition.

During the development of merger tides, the counterparties of the deal seek some new tools or mechanisms to maximize their profit and benefits. In western countries, earnouts was proposed to lower acquirers' risk originating from information asymmetry and facilitate the negotiation between two counterparties. Earnouts, to some degree, can be defined as a kind of contingent consideration clause, in which the contingent payment is based on the trigging condition is reached or not. Moreover, this kind of mechanism is wildly used on deals that targets are private companies or are the subsidiaries of listed companies (Chen (2017)). At the same time, the valuation adjustment mechanism made a figure in China while earnouts were prevalent in western countries. The two mechanisms have many similarities, as they all can be defined as pricing adjustments. The valuation adjustment mechanism can be viewed as a modification of earnouts in China. One of the first Chinese deals to embed a valuation adjusting mechanism was Mengniu (2002) and Yolo (2005) trading with Morgan Stanley, respectively.

This study aims at deepening our understanding of performance compensation commitment, which was put forward by the China Securities Regulatory Commission (hereafter as CSRC) in 2008 under the background of equity division reform. We analyzed the signing motivation of performance compensation commitment based on risk aversion perspective. Moreover, this paper tries to split the risk into three different levels: industry, company, and transaction, enriching the analysis of performance compensation commitment and providing some hints to practical applications.

The performance compensation commitment requires that for transactions of underlying assets valued based on future earnings expectations, the listed companies should sign the performance compensation agreements with their counterparties. However, in the concrete implementation process, it failed to give play to protect the interests of young investors. The signing of the agreement more or less became formalistic,

leading to the occurrence of major shareholders arbitrage away from the market while young shareholders beard the loss ultimately. After introducing the new regulations in 2014, listed companies can negotiate whether to sign the performance compensation commitment according to market-oriented principles. The signing of performance compensation commitment has become more of a market-oriented behavior. Under this background, the research on why acquirers would actively propel to sign performance compensation commitment is more practical. Moreover, the signing behavior can also send some valuable signals to the market.

There has been abundant literature about mergers and acquisitions, covering topics like post-acquisition performance (Healy, Palepu and Ruback (1992); Franks, Harris, and Titman (1991); Feng et al. (2001); Li et al. (2004), etc.), valuation adjustment mechanism (Datar, Frankel, and Wolfson (2001); Barbopoulos, Paudyal, and Sudarsanam (2012, 2017); Cadman et al. (2014); Lv and Han (2014); etc.) and performance compensation commitment (Pan, Qiu, and Yang (2017); Yin and Wu et al. (2019); etc.).

In western countries, many scholars devoted to the analysis of post-acquisition performance and found out different empirical shreds of evidence. The way to measure post-acquisition performance can be divided to two categories: operation performance and share price performance. For operation performance, some held the view that mergers and acquisitions could significantly increase acquirers' operation performance by creating synergies through resource sharing and complementarity and some scholars found no evidence that operation performance improved post acquisition. Furthermore, many scholars tried to find out intermediate factors influencing the performance, including acquisition experience (Hu, Li, Li and Wang (2020)), culture difference (Bereskin, Byun, Office and Oh (2018)), target companies' operation efficiency (Kim, Na, and Kim (2018)), the organizational difference (Datta (1991)), etc. However, in China, scholars generally believed that mergers and acquisitions failed to give full play to due synergies and failed to improve performance as expected.

As for valuation adjustment mechanism, in western countries, the valuation adjustment mechanism appears more as earnouts on merger and acquisition transactions in western countries. Earnouts (contingent considerations) provide sellers with future payments conditional on meeting certain commitment. In essence, earnouts enable less-informed bidders to shift the risk of mis-valuation of the more informed targets under the background that acquiring companies and target companies have different expectations to the target value. (Kohers, Ninon, Ang, James (2000)). And the influence of earnouts to performance can be divided into 2 different stages: pre-SFAS 141R period and post-SFAS 141R period. Generally, earnout deals outperformed non-earnout deals (Barbopoulos, Paudyal, and Sudarsanam (2017); Datar, Frankel, and Wolfson (2001)) in the pre-SFAS 141R period. However, it also had risks, which may easily lead to the short-sighted behavior of the company management that only focused on achieving the promised performance and neglecting the long-term development of the company in post-SFAS 141R period. Unlike valuation adjusting mechanism in

western countries, domestic valuation adjusting mechanism includes two parts: performance commitments, an investing agreement between acquiring companies and target companies and the latter promise to achieve a particular growth of the business, and performance compensation commitment. The two are usually used together.

In terms of performance compensation commitment, the current kinds of literature mainly cover the signal and incentivization effect of performance compensation commitment (Lv and Han (2014); Pan, Qiu and Yang (2017); etc.), performance compensation direction and methods (Pan, Qiu and Yang (2017); Wang (2018); etc.), accounting treatment of different methods (Xie (2016); Yu and Xue (2015); etc.), and related goodwill impairment (Zhang (2021); Wang (2021); etc.).

Lv and Han (2014) believed that the introduction of performance compensation commitment could provide signal value for the acquiring companies, reduce the transaction costs of mergers and acquisitions, improve the chances of high-quality companies being acquired, and improve the synergistic effect of mergers and acquisitions. At the same time, the pressure of performance compensation commitment could motivate management to promote integration further.

From compensation direction points of view, performance compensation commitment can be divided into: one-way performance compensation and two-way performance compensation. One-way compensation means that the target should compensate for the loss if they fail to meet the performance targets agreed on the prior contract. Two-way compensation includes the clause in one-way compensation and requires the acquirer to award the targets if they achieved high performance beyond expectations. However, Pan, Qiu, and Yang (2017) and Wang (2018) found that two-way performance compensation commitment did not show a more significant incentive effect.

Performance compensation methods are mainly divided to: cash compensation, stock compensation, and mixed compensation. Over 70% of performance compensation agreements chose cash compensation as it is more direct and has less uncertainty, but share-based payment had a more significant incentive effect on companies (Pan et al. (2017)).

As for the accounting treatment of performance compensation commitment, scholars' research concentrates on two aspects: cash compensation and stock compensation. Generally, scholars reached a consensus that performance compensation commitment can be classified as contingent consideration based on China Accounting Standards (CAS), and it is essentially a kind of financial asset. However, they hold different opinions in its specific categorization (Xie (2016)). For example, Xie et al. (2016) believed that the accounting of performance compensation commitment should be distinguished between cash compensation and stock compensation. The cash compensation should be booked into the current profit and loss, while the stock compensation should be booked into capital reserves (equity premium).

As for goodwill impairment under the background of performance compensation commitment,

goodwill impairment was highly related to the realization of performance commitment. When the performance commitment was realized well, the acquirer did not withdraw or withdraw a small amount of goodwill impairment; when the performance commitment was realized poor, the acquirer would set aside a large or total amount of goodwill impairment (Zhang (2021)).

However, few pieces of research have focused on the analysis of motivation for signing performance compensation commitment (Zhou and Chen (2020); Rao and Zhou (2020); etc.). Zhou and Chen (2020) analyzed the impact of industry risk, acquisition premium, and payment method on the signing of performance compensation commitment. They found that high premium and stock payment could lead to a high possibility of signing the commitment. While under the background of horizontal mergers and acquisitions prevailing, high industry risk led to lower possibility in signing the commitment. Yin et al. (2019), from the perspective of agency theory, found that the higher the excess cash holdings and the more concentrated the equity, the less likely the target company to adopt performance compensation commitment. The larger the merger and acquisition scale was, the more likely the performance compensation commitment might be signed. Rao and Zhou (2020) divided the motivation of introducing the valuation adjusting mechanism to two aspects. From the acquirer's point of view, performance compensation commitment could effectively boost acquisition, lower acquisition risk, and incentivize target companies' management team. As for targets, the valuation adjusting mechanism could facilitate the equity financing process while retain the control for managing the company.

More importantly, few studies cover the influence of financial risk and operational risk at the company level on performance compensation commitment signing. Therefore, this study, to some degree, can fill this gap in the existing literature.

Based on the literature review, this paper proposes the following three hypotheses related to performance compensation commitment motivation from the perspectives of industry, company, and transaction:

Under the theory of information asymmetry, acquiring companies, to some degree, can judge targets' future operating risks by using industry risk information. The higher the industry risk is, the higher the uncertainty and volatility of target companies' profitability. A company's development, especially its performance growth, is highly influenced by industry and market change. (Zhang (2017)). In order to ease the risk brought by industry, acquiring companies would have higher motivation to urge targets to sign performance compensation commitment. Therefore, the first hypothesis is proposed:

H1: The higher the industry risk, the more likely it is to sign the performance compensation commitment

Whether the performance commitment can be fulfilled is highly related to the enterprise's financial situation and operational situation. When an enterprise's capital structure is unreasonable, it would lead to high financial risk and face high financial pressure in the future. If there were better investment opportunities, it

could only choose to give up, which will eventually lead to the decline of the overall return on investment. When the operating risk of the enterprise is significant, the acquirer will face the greater risk of substandard performance after acquisition (Zhang (2017)), and the stronger the incentive to sign performance compensation commitment will be. Based on this, the second hypothesis is proposed:

H2a: The higher the company's financial risk, the more likely it is to sign the performance compensation commitment

H2b: The higher the company's operational risk, the more likely it is to sign a performance compensation commitment

In essence, merger and acquisition is a process of optimal allocation of resources, and the acquisition premium contains expectations of the benefits by acquiring companies. However, the study found a significant negative correlation between the merger premium and the efficiency of the acquisition (Wen (2015)). Meanwhile, a high premium was often accompanied by undesirable phenomena such as arbitrage, corruption and earnings management (Huang et al. (2018)). That is to say, high risks accompany high premium. In cases where performance commitment is failed to be met, the acquirer will suffer more significant losses. Based on this, a third hypothesis is proposed:

H3: The higher the M&A premium rate is, the more likely it is to sign the performance compensation commitment

The sample of this study was drawn from CSMAR and Wind databases, which include the information of all merger and acquisition transactions and primary financial and operational data of un-listed companies.

Since the performance commitment period is generally three years, and to maintain data freshness, this paper selected transaction samples from the merger and acquisition database in CSMAR from January 1, 2018 to December 31, 2020.

Considering the availability of data, we set the criterion that acquirers should be listed companies. The transaction samples with acquiring companies of abnormal operating conditions such as ST and delisting of the acquirer were also removed. More importantly, the evaluation method of target companies was defined as the income method (valuation method based on future earnings expectation) in order to fit the new policy (***New Measure (2014)***).

We also set the standard that all transactions should have already been closed successfully. In consideration that information asymmetry of non-affiliated transactions is relatively significant and that ***New Measure (2014)*** mainly targets non-affiliated deals, affiliated transactions in the data samples were cut out in this paper. As transactions such as backdoor listing do not conform to merger and acquisition's economic nature, this paper also eliminated these transactions. Considering the stability of data, this paper set the transaction amount threshold as RMB 1 million.

After the above selection, we retained 180 pierces of data.

Since target companies in the selected sample were mostly non-listed companies, indicating the difficulty of data collection. We had to process them manually for variables related to target companies' industry risk, target companies' financial and operational risk. For industry risk, firstly, we used Wind Global Enterprise Database to locate the industry target companies are in, then matched related industry code, and extracted data from CSMAR. Data related to target companies' financial and operational risk could be collected from Wind Global Enterprise Database and Skycheck.

In order to examine the three hypotheses we raised above, we had one dependent variable and four independent variables in total.

The dependent variable of this analysis is whether to sign a performance compensation commitment *(*PCC).* Data regarding the signing of performance compensation commitment were collected from CSMAR with the criteria that if there existed performance compensation commitment clause, the value of the index would be 1, other than it would be assigned 0.

In the first analysis of this study, aimed to test hypothesis 1, the independent variable is industry risk *(*IndRisk),* which is designed to measure the industry risk of target companies. In consideration of data accessibility, we were unable to get the industry risk of target companies directly. Therefore, we used the industry risk (β) of listed companies corresponding to the target industry as the proxy to measure the target company's industry risk. The time interval was limited to one year before the date of first announcement of the transaction. In the calculation of target companies' industry risk, we used data from the last 365 trading days before the first deal announcement date. According to the capital asset pricing model, we adopted the daily market return average method considering the reinvestment of cash dividends and adopted the daily risk-free rate as parameter.

This paper adopted two different independent variables in order to measure financial risk *(*TarLev)* and operational risk *(*OpeRisk)* of target companies to verify the second hypothesis. As for financial risk, since the company's financial risk is highly related to the capital structure, this paper used the asset-to-liability ratio to measure the financial risk of the target enterprise. Due to the lag of the financial report, the data available to the acquiring company at the time of actual transaction is not current data. Therefore, the reporting period of assets and liabilities was set at the end of the previous year nearest to the first announcement date of the transaction. The operational risk data were obtained from the Wind database and Skycheck. The operational risk of the corresponding target company was determined by the number of operating risk items displayed in the database. Due to the inconsistencies in the data structure of Wind and Skycheck, we processed the variable into a dummy variable (if there exists any risk item, the value would be 1 or it would be 0). The items showing "no risk" in the routine check part were not included in the risk calculation.

In the third model of the study, designed to prove hypothesis 3, the independent variable is acquisition premium *(*AcqPremium).* The index is calculated by the formula (Acquirer's Expenditure/Book value of the

underlying transaction -1). Furthermore, the data could be collected from CSMAR directly.

In all the three analyses, we included control variables in terms of acquiring company's features and transaction features: acquiring companies' leverage *(*AcqLev)*, percentage of shares held by the first shareholder of acquiring companies *(*ShProp1st)*, asset size comparison between acquiring and target companies *(*SizeComp)*, payment methods *(*PayMethod)*, and share transferred to acquiring companies *(*ShareTrans)*.

The asset-liability ratio of the acquirer *(*AcqLev)* reflects the degree of financing constraints of the acquirer. The higher the debt level of the acquirer is, the greater the financial risk it will face, and the control of the potential risk of the acquisition will be more cautious. Therefore, the asset-liability ratio of the acquirer was set as the control variable in this paper.

According to the research of Yin et al.(2019), the higher the ownership concentration, the major shareholders will have the absolute right to vote when making strategic decisions, and the stronger the motivation to infringe the interests of small and medium shareholders to obtain their interests. The signing of performance compensation commitment to some extent inhives the transfer of interests of major shareholders, so they tend not to sign performance compensation commitment. In this paper, the ownership concentration of the largest shareholder *(*ShProp1st)* was set as the control variable.

In Zhou's (2020) research, the comparison of net asset size between acquirers and targets *(*SizeComp)* has been set as control variables. We followed this routine and control the variable in our regression as we believe the size difference would have specific effects on the signing of performance compensation commitment through the market influence brought by company size.

When the acquirer uses stock for payment, on the one hand, it reduces the large outflow of cash and reduces the financing constraint; on the other hand, it also enables both parties to share risks and benefits. The acquirer chooses to adopt share-based payment rather than cash because the potential risk of the acquisition event is observed under the condition of misinformation, and thus has an impact on the willingness to sign performance compensation commitment. (Zhou and Chen (2020)) Thus, we included payment method *(*PayMethod)* as one of our control variables in our study.

The percentage of share transferred *(*ShareTrans)* is the main aspect of transaction features. Most kinds of literature have included this point as a control variable (Zhou (2020); Yin and Wu (2019); Lv and Han (2014), etc.). The percentage of shares transferred can determine the control ability that acquirers would have after acquisition, and the risk acquirers bear in the business.

We performed our analyses by testing four models.

Model 1 involves the full sample of merger and acquisition deals after screening from 2018 to 2020. It aims to test the impact of industry risk to the signing of performance compensation commitment. (Hypothesis 1)

Model 2 focuses on the analysis of the impact of company risk on performance compensation commitment, and it measures the company risk from two aspects, including financial risk and operating risk, and analyzes whether the two kinds of risk influence the signing of performance compensation commitment (Hypothesis 2a and Hypothesis 2b)

Models 3 uses to test the impact of transaction risk on the signing of performance compensation commitment (Hypothesis 3)

Model 4 is based on the former three models and results, including all the independent variables that are significant in 5% level, and test whether they all significant or not (Hypothesis 1 and 3)

Due to the nature of the independent variable being a binary variable, the paper uses Probit regression to carry on empirical analysis. It is found that:

Conclusion 1: Impact of industry risk on the signing of performance compensation commitment

Hypothesis 1 proposed that the higher the industry risk is, the higher the possibility to sign the performance compensation commitment.

In Zhou's (2020) study, she measures the industry risk by using the average monthly risk of industries that targets belong to. In this study, after matching the industries targets belong to, we used an average daily risk with a weight of aggregate market value. Our research has considered the risk in a more precise way.

A company's growth is dependent on the growth of the industry and the competition within the industry. When the industry risk becomes higher, the uncertainty of operating a business would be more severe, and potential growth would be hard to predict. Thus, the risk related to the merger would be higher. In terms of risk aversion and risk control, acquirers would have higher motivation to urge targets to sign the commitment.

The result is different from Zhou's (2020) research, where she did not find a significant relationship between industry risk and the signing of performance compensation commitment. However, in our study, we found a positive correlation between industry risk and signing. A possible explanation proposed by Zhou is that the sample deals are mostly horizontal acquisitions, where the information asymmetry was lowered. However, in our study, the percentage of horizontal acquisition is only 23.3%.

Conclusion 2: Impact of company risk on signing of performance compensation commitment

Hypothesis 2 proposed that the higher the company risk, the higher the possibility of signing the performance compensation commitment and measuring the company risk from financial and operational aspects.

No related papers analyzed the impact of company risk on the signing of performance compensation commitment as most of the targets are private companies and it is hard to get related information. In our study, we manually collected the financial information and operational information of targets, but the regression results are failed to prove what we proposed. We did not find a significant relationship between company risk and the signing of performance compensation commitment.

We still believe that the higher the company risk is, the higher the possibility of acquiring companies to urge to sign the performance compensation commitment. However, in real deals, usually, acquirers are unable to collect enough information to judge targets' financial and operating risk. At the same time, if a target has high risk financially or operationally, it would be more cautious about signing the commitment as they know their ability are restrained.

Conclusion 3: Impact of transaction risk on the signing of performance compensation commitment

Hypothesis 3 proposed that the higher the transaction risk, the higher the possibility to sign the performance compensation commitment.

In this study, we followed Zhou's (2020) research and used acquisition premium to measure the risk at the transaction level. Target shareholders exited out with satisfied benefits when the acquisition premium is high, leaving the potential risk to acquirers. If target companies' future performance is under expectation, the loss would be beard by the acquirer's shareholders. Therefore, when paying a high premium, acquirers would be more motivated to sign the performance compensation commitment.

Our empirical result is consistent with Zhou's (2020) research: higher premium has a positive impact on the signing of performance compensation commitment.

In order to overcome the problem of sample selection bias, we used Heckman two-step to conduct a robust check. Firstly, we constructed a Probit model related to factors influencing the signing of performance compensation commitment. The independent variable is the signing of performance compensation commitment, which is a dummy variable. Moreover, the dependent variables include industry risk, acquisition premium, payment method, acquirer's leverage, the share proportion held by the first shareholder, size comparison, share transferred in the deal. Then based on the regression result, we calculated the Inverse Mills index (imr). We included the imr in the second stage of regression, the results of industry risk and transaction risk are still significant.

To solve the problem of omitted variable bias, in the robust check, we add two indexes related to acquirer's profitability and growth potential. Suppose the acquirer has better profitability and growth potential. In that case, it will have a stronger ability to deal with future uncertain risks, and the motivation to control the future risks of the acquisition is relatively weak. In consideration of this, we put acquirer's ROE and growth rate of net asset per share as newly added control variables into our Probit regression model. After adding, the results are still significant.

In conducting the empirical analysis, we faced the problem of lacking information related to private target firms. In order to solve this, we collected deals with targets were listed companies and used Probit regression. We got results consistent with the main research.

In summary, the main conclusions of our study are listed below:

1. Industry risk has a positive impact on the signing of performance compensation commitment. The

higher the industry risk is, the higher the possibility to sign the commitment

2. There is no significant relationship between company risk and the signing of performance compensation commitment.
3. Transaction risk has a positive impact on the signing of performance compensation commitment. The higher the transaction risk is, the higher the possibility to sign the commitment

To sum up, the performance compensation commitment is a unique mechanism put forward by CSRC in consideration of China's market specialness. After the issue of the ***New Measure (2014)***, the application of performance compensation commitment became more and more market-oriented, embedding much more information in the signing move. Another evidence that can indicate the marketization is the frequency of using performance compensation commitment. From 2018 to 2020, the percentage of transactions using the commitment is decreasing though the overall proportion of deals embedded with performance compensation commitment is still significant. The decreasing trend signifies cautiousness when using the commitment.

This study analyzed the factors influencing the signing of performance compensation commitment from industry, company, and transaction levels and found out the significant impact of industry and transaction risk. From the acquirer's perspective, our findings can provide acquirers with factors that need to be considered in urging targets to sign the commitment. For industries with high risk, the future operation uncertainty would be higher. Higher risk has been inserted into the acquisition and urging for signing performance compensation commitment would be an excellent choice to protect acquirers' benefits.

From institutional investors and small shareholder's points of view, the motivation research can provide them with implications that the deal clause may include. For example, suppose a listed company completes a merger with a private company with performance compensation commitment clause. In that case, small shareholders can reasonably infer that the private company is in a high-risk industry or the acquisition premium is relatively high.

As for targets, after considering the industry risk and acquisition premium, they may face heavy pressure of signing performance compensation commitment, then their focus should move from whether to sign to how to construct the deal clause like the performance targets.

Despite the quality of the analysis employed in the study, there are still three limitations embedded in the research:

Firstly, there is a robust reverse causality between acquisition premium and performance compensation commitment signing. In this study, we assume the acquisition premium has an impact on the signing of performance compensation commitment. However, there still exists an opinion that the signing of a performance compensation commitment would boost the acquisition premium. For example, Song and Liu (2020) found that high-performance commitment can lead to a high acquisition premium through analyzing the acquisition of MJ company by HH company. Unfortunately, in the robustness test, the paper failed to find

an appropriate instrumental variable to test the corresponding two-way causality.

Secondly, the limited availability of data regarding private targets' financial and operational information would lead to the inaccuracy of our results. As for financial risk, we use the asset-to-liability ratio to measure the risk targets have, but we failed to find other related indexes to proxy due to data limitation. Moreover, for operational risk, due to the data not in the same format, and consideration of data consistency, we processed the data as a dummy variable. Although we changed the data set with targets as listed company out of data availability in the robustness test, it might incur some problems of sample selection.

Thirdly, this paper fails to consider all the factors that affect the commitment signing. The problem of omitted variable bias cannot be thoroughly solved by adding new variables.

Future studies could attempt to overcome the limitations by finding a proper instrumental variable to solve the listed problems. Furthermore, along with the trend that the signing of performance compensation commitment would be more market-oriented, we can find some new angles about motivations of performance compensation commitment signing and follow the same procedure of this study to examine their impacts.

[i] Equity division reform: The process of eliminating the institutional differences of share transfer in the A-share market through the interest balance negotiation mechanism between non-tradable shareholders and tradable shareholders